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MICROCOPY RESOLUTION TEST CHART

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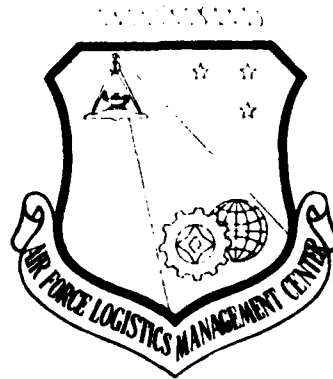
LOGISTICS APPLICATION OF MICROFICHE
BASE-LEVEL (LAMB)

by

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April 1984

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FORWARD

IN CONDUCTING RESEARCH ON THIS PROJECT AND CONTACTING OPERATIONAL COMMANDS, AIR FORCE DIRECTORATE OF AUTOMATION, AND THE WARNER ROBINS INVENTORY MANAGER, SEVERAL CHANGES HAVE BEEN INTRODUCED WHICH AFFECTED WHAT WE WOULD HAVE RECOMMENDED. FOR EXAMPLE, THERE HAS BEEN A REDUCED EMPHASIS ON CONVERTING HARD COPY DOCUMENTS TO MICROFICHE (AFM 12-50, WHICH WAS SCHEDULED TO CONVERT TO MICROFICHE, HAS REMAINED HARD COPY). ADDITIONALLY, TA 007, "AUTOMATIC AND ELECTRONIC ADMINISTRATIVE SUPPORT EQUIPMENT AND COMPONENTS (OFFICE INFORMATION SYSTEMS)," WHICH DID NOT CONTAIN A MOBILITY AUTHORIZATION FOR MICROFICHE VIEWERS, WAS REVISED ON 15 JANUARY 1984, AND NOW CONTAINS A MOBILITY AUTHORIZATION. WE THANK THOSE INDIVIDUALS WHO HAVE MADE THOSE CHANGES AND IMPROVED THE OPERATIONAL CAPABILITY OF THE AIR FORCE.

Accession For

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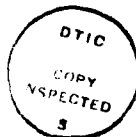
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ABSTRACT

The purpose of this project was to determine the peacetime and wartime impacts of not having appropriate microfiche viewers at base-level and propose recommendations that will assure adequate and appropriate equipment availability.

EXECUTIVE SUMMARY

The current trend of converting reference material or written records to microfiche is being driven by rising costs associated with the creation and handling of hard copy documents. This trend appears to enhance our deployability of these references or documents. However, the Air Force must also consider the deployability of micrographics equipment.

Most of the microfiche equipment in the Air Force inventory does not offer the flexibility called for during peacetime deployments or contingency operations due to size (portability) and power requirements, (worldwide - 110/220 volt, 50/60 cycle AC, 12 volt DC). Until Table of Allowance 007, **Automatic and Electronic Administrative Support Equipment and Components (Office Automation Systems), was** revised on 15 January 1984, there was no guidance for authorizing portable, worldwide usable microfiche equipment.

This report recommends:

a. MAJCOMs should review current microfiche viewer authorizations to determine additional quantities required to support mobility tasking. New authorizations and procurements should be for the portable microfiche viewers included in TA 007, dated 15 Jan 84. (OPR: MAJCOM/LGs)

b. MAJCOMs should assess their current inventory of microfiche viewers and take action to correct packaging and power requirement deficiencies. (OPR: MAJCOM/LGs)

c. AFLC should update TA 007. Portable microfiche viewer, NSN 6730-01-1504137CU, should be specifically included in allowance source codes BBA through BBW. Basis of issue for this portable viewer should be as required for deployment/mobility or mission support. (OPR: AFLC/MM)

TABLE OF CONTENTS

CHAPTER 1

THE PROBLEM

1-1 <u>Project Background</u>. During their 20 January 1982 meeting at the Air Force Logistics Management Center (AFLMC), the Board of Advisors (BOA) suggested we get actively involved in air base survivability issues. This project was established under the AFLMC Logistics Survivability Five-Year Program Area.

1-2 <u>Problem Background</u>. The Air Force has and continues to convert reference material or written records to microfiche. These documents include Technical Order Indexes, Tables of Allowances (TAs), stock lists, etc. Although this would appear to enhance deployability of these references or documents, the Air Force must also consider the deployability and usability of microfiche equipment required to read microfiche.

Planned deployment locations require that we be prepared to operate under a variety of conditions and threats. For example, during peacetime deployments such as Team Spirit, Bright Star, Proud Phantom, and Reforger the Air Force encountered different electric power sources and environmental conditions than those available at home station. Additionally, deployment requires equipment and packaging which can withstand the hardships of cargo marshalling and handling.

Additionally, since microfiche equipment breaks, compatibility of microfiche viewers at a deployed location would enhance a unit's capability to keep a maximum number of microfiche viewers operational.

1-3 <u>Problem Statement</u>. Microfiche support for wartime tasking is inadequate for the following reasons:

    a. Lack of guidance.

    b. Lack of mobility allowances in TAs.

    c. Physical limitations and diversity of currently authorized microfiche equipment.

CHAPTER 2

DEVELOPMENT

2-1 **Approach.** The following approach was used to identify problems and potential impacts.

    a. Review of publications and contact with other DoD and Air Force agencies to determine trends in converting hard copy to microfiche.

    b. Survey of MAJCOMs. Copy of survey questions can be found in Attachment 1.

    c. Analyze equipment requirements for deployment and operation in deployed environment.

    d. Review of Table of Allowance 007 to determine adequacy, applicability, and currency of microfiche viewer authorizations.

    e. Review of several commercial microfiche viewer equipment catalogs to determine what types of microfiche viewer equipment are readily available, as well as estimated costs.

2-2 **Results.**

    All of the above efforts were combined to evaluate potential deficiencies in the microfiche viewer equipment area. This evaluation resulted in identification of base-level microfiche viewer equipment shortcomings.

    a. Our review of the types of documents already converted to microfiche indicated that critical logistics support functions require micrographic equipment when deployed. For example, all Terminal Facilities Guides and most stocklists are on microfiche. Additionally, several other regulations and manuals critical to deployed operations have already been converted to microfiche. (See Atch 3)

    We also reviewed the trend in converting hard copy into microfiche. Air Force Regulation 5-2, "**Standard Publications in Microform**," provides policy in considering whether to convert to microfiche: (1) Fiche are cheaper than hard copy, and (2) The publication will be easy to read or easier to use on fiche than on hard copy.

    Based on this policy and our discussion with both USAF/DA and MAJCOM personnel the Air Force will continue to convert hard copy to fiche when economics and usability dictate.

    b. We asked Air Force major air commands to review the impact of microfiche viewers on their ability to deploy and operate in a deployed environment. Based on their inputs, the Air Force has overlooked the requirement for deployment of microfiche viewers during the same time frame that they are being used at home units. For example, virtually all MAC maintenance activities report they would be unable to support generation

deployment situations, or deployment requirements, if day-to-day operations at home station were conducted simultaneously. Furthermore, most of SAC's functional areas report they do not possess sufficient microfiche viewers for contingency commitments.

c. Shortcomings also exist in the capability to deploy and operate microfiche viewers at the deployed location.

(1) Power Requirements: Approximately 5% (1047) of Air Force microfiche viewers operate on 110 volt, 60 cycle current. These viewers are not readily adaptable to the 220 volt, 50 cycle current in Europe and elsewhere. In most cases, this equipment can be "rigged" to work by adding a transformer and changing the extension cord male adapter. However, most units have procured equipment based on day-to-day home station requirements without considering it may have to be used in other areas.

(2) Deployment Requirements: Because of the wide use of microfiche, microfiche viewers must accompany units during deployments. Although current equipment items are listed in the TA as "portable," they are not. They are bulky and fragile. Most are too large for one man to carry safely and are likely to break when dropped from heights greater then three or four feet. Also, because of internal motors and glass screens, extensive packaging and careful handling are required for anything beyond interoffice moves. Based upon our review of microfiche currently in the inventory, at least 98% do not meet portability requirements. A portable microfiche viewer must meet the following criteria:

a. Built-in worldwide AC electric power compatibility.

b. Built-in DC rechargeable battery pack.

c. Small (briefcase size), lightweight (less than 20 pounds), and ruggedized (withstands falls from four feet, aircraft vibrations, and temperatures from -10 to 190 degrees F).

(3) Backup Power: Another major shortcoming identified is that critical areas such as supply research, allowance and authorizations, repair cycle support, and the mission capability (MICAP) section must have backup power due to heavy reliance on microfiche (no hard copy backup exists for many of their source data documents). Provision for backup power (self-contained battery power) is essential for mission accomplishment during electrical power outages or failures.

After evaluating the above shortcomings, we determined that lack of appropriately configured or sufficient quantities of microfiche viewers would have a detrimental impact on mission support. Mission impacts, identified in Figure 2-1, were developed as a result of MAJCOM inputs.

IMPACT OF DEFICIENCIES ON MISSION

1. Cannot generate and deploy with current equipment on hand and still support home base requirements.
2. Workarounds required to deploy current equipment.
3. Causes an increase in manhours and personnel.
4. Wartime location could render current equipment useless based on power requirements.
5. Delays in supporting wartime mission without backup power.

FIGURE 2-1

d. We reviewed TA 007, "**Automatic and Electronic Administrative Support Equipment and Components (Office Information Systems),**" dated 1 July 1983, to determine if this document provided allowances for mobility requirements and listed microfiche viewers which satisfied the "deployable criteria" listed in paragraph 2-2 c. above. The introduction to TA 007 specifically states, "**Excluded are war reserve material (WRM) allowances.**" Additionally Section B of TA 007 did not contain allowances for microfiche mobility requirements nor did it list microfiche equipment which satisfies necessary portability and power requirements. For example, the Realist/Vantage IV, NSN 6730-01-038-2447 had been designated to replace the Mini-Cat 1114, because the Mini-Cat projects a fuzzy, indistinct image which has caused eye strain, headaches, etc. However, the Realist/Vantage IV operates only on 110 volts, 60 cycle power. TA 007 did list a microfiche viewer as portable (Ektalite 140 Reader, NSN 6730-00-111-5313). However, we physically examined this microfiche viewer and it's bulky, fragile and required extensive packaging for anything beyond an interoffice move. TA 007 also provided an allowance for a microfiche viewer (NSN 6730-00-469-9521) which allows the user to obtain a viewer of any configuration. This provides the flexibility to obtain microfiche viewers which meet portability and power requirements. However, it depends on the initiative and foresight of the individual establishing the authorization to consider potential worldwide mobility requirements for the viewer.

e. **The 15 Jan 84 TA 007 has changed and a portable microfiche viewer which meets deployment requirements has been included.** However, this portable microfiche viewer is currently identified only to supply (allowance source code BBR). The national stock number, item description and basis of issue, like that listed in allowance source code BBR, should be added to allowance source codes for other base/wing activities from BBA through BBW. Basis of issue should be as required for deployment/mobility or mission support.

f. We reviewed the availability of "off-the-shelf" microfiche viewers which would meet the deployability and power requirements. There have been several microfiche viewers designed for portability which also meet the power criteria established in paragraph 2-2 c. above. These include:

	Power Volts	Cycles	DC	Battery	Weight	Package
Show-Kit (Visidyne)	115/230	50/60	Yes	Yes	12.5lbs	Briefcase
Tec-Kit (Visidyne)	115/230	50/60	Yes	Yes	14.0lbs	Briefcase
Realist Agent (Realist)	120/240	50/60	Yes	Yes	10.0lbs	Briefcase
WSI Elite II (Anacomp)	120/240	50/60	Yes	Yes	16.0lbs	Briefcase

Each of the above microfiche viewers meet worldwide deployment requirements (see attachments 2-1 through 2-3 for greater detail).

CHAPTER 3

CONCLUSIONS

3-1 <u>General</u>. Our findings revealed serious deficiencies in microfiche viewer guidance, TAs, and equipment. MAJCOMs cannot meet their peacetime mission and deployment mobility requirements at the same time with the quantities and capabilities of currently authorized equipment. Many deployment destinations require the ability to operate under all circumstances. There is a need to have a 110/220 volt, 50/60 cycle capability as well as battery backup power for logistics areas identified as mission critical. In addition, much of the equipment currently in the inventory are not portable. They are bulky, fragile, and require extensive packaging and handling for anything beyond interoffice moves. Therefore, recommendations are proposed that will assure adequate and appropriate equipment availability for peacetime and wartime uses.

CHAPTER 4

RECOMMENDED IMPROVEMENTS

Recommended Improvements. Managers must be able to provide the right amount of mission ready equipment in the proper configuration to give routine support in peacetime, and higher levels of support during exercises and contingencies. To provide this capability, the following recommendations are made:

a. MAJCOMs should review current microfiche viewer authorizations to determine additional quantities required to support mobility tasking. New authorizations and procurements should be for the portable microfiche viewer included in TA 007, dated 15 January 1984. (OPR: MAJCOM/LGs)

b. MAJCOMS should assess their current inventory of microfiche viewers and take action to correct packaging and power requirement deficiencies. (OPR: MAJCOM/LGs)

c. AFLC should update TA 007. Portable microfiche viewer, NSN 6730-01-1504137CU, should specifically be included in allowance source codes BBA through BBW. Basis of issue for this portable viewer should be as required for deployment/mobility or mission support. (OPR: AFLC/MM).

22 SEP 1983

REPLY TO
ATTN OF AFLMC/CD

SUBJECT Logistics Application of Microfiche Base-Level (LAMB)

TO AAC/LG

1. The current trend of converting reference material or written records to microfiche is being driven by rising costs associated with the creation and handling of hardcopy documents. While this trend would initially appear to enhance our deployability of these references or documents, it also raises questions regarding the reliability of micrographics. Microfiche readers, currently listed in the Table of Allowance (TA) 007, may not offer the flexibility called for during peacetime or contingency operations due to size, power requirements, quantities and types of equipment available.

2. Headquarters USAF/LEX has indorsed a project to have the AFLMC identify potential problems associated with microfiche readers and propose solutions that will assure adequate and appropriate equipment availability to base-level logistics users. Emphasis will be on the day-to-day peacetime operations, operations during wartime sortie generation, and problems encountered during deployed operations. The attached Preliminary Analysis Status Sheet (PASS) further explains the problem and addresses potential benefits of such a project.

3. Request your staff inputs to the following areas:

    a. General:

        (1) Do the logistics functions (transportation, maintenance, supply, and logistics plans) have adequate numbers of microfiche readers to: (a) meet day-to-day operations; (b) generation/deployment commitments and (c) deployed requirements?

        (2) What are the peacetime and wartime power requirements for your current readers?

        (3) Are they portable and truly deployable?

        (4) Can they be supported through normal supply channels?

        (5) Are microfiche readers included in necessary fly-away/mobility kits?

ATCH 1 –1

b. Specifics:
   (1) Under base supply, are the following functional areas adequately
equipped for microfiche uses based upon the previous questions?

        - Research
        - Allowance and Authorization
        - Inspection
        - Repair Cycle Support (Inspection)
        - Individual Equipment
        - Mission Capability (MICAP)

        (2) Does Logistics Plans have adequate microfiche equipment for
LOGDET, MANFOR, Tables of Allowances and AFR 12-50?

        (3) Can transportation microfiche equipment in Material Control,
Maintenance, and Quality Control (Technical Orders and Time Compliance
Technical Orders Support) provide mission support under peacetime, generation,
deployment and deployed situations?

        (4) Are the Deputy Commander for Maintenance functional areas of
Quality Control, Material Control, and Plans, Programs and Mobility adequately
equipped to support mission requirements?

   c. Additional Information:

        (1) Are your MAJCOM Logistics functional areas internally converting
hard copy documents to microfiche for any reason such as improved cost,
decreased storage, etc.?

        (2) What is the future trend of microfiche conversion in your MAJCOM?
Example: regulations, TCTO's, supplements, etc.

        (3) Will your logistics areas have enough microfiche readers to meet
this trend?

        (4) Has the recent trend to microfiche conversion created the need
for additional readers?

        (5) Based on current and projected conversion trends, what new
offices in each of the functional logistics areas will need microfiche readers
in the future?

4. Please feel free to provide additional comments concerning this project.
We believe it has great potential to improve USAF readiness. AFLMC point of
contact is CMS Hankins, AFLMC/LGX, Autovon 446-3535/3355. Request you provide
a MAJCOM POC and telephone number. We would appreciate your response NLT
15 November 1983.

EDWIN C. JONES, JR
Deputy to the Commander   ATCH 1-2

SHOW-KIT™
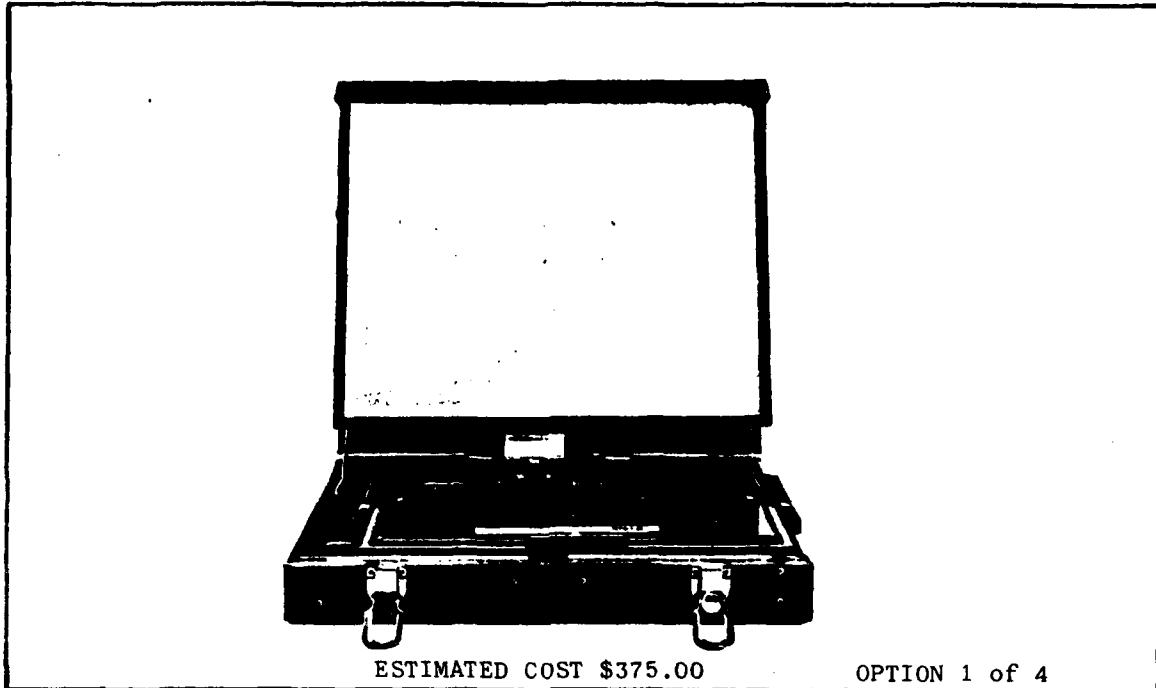
ESTIMATED COST $375.00   OPTION 1 of 4

An improved version of a portable microfiche reader that has been used by customer engineers, technicians, sales persons, educators, and others, for years. The 11 X 14 inch screen allows full-size blowback of both hard copy documentation and COM fiche.

Show-Kit is lightweight. It weighs less than 12.5 pounds — yet it is built into a rugged case that is designed for travelling.

Schematics, wiring diagrams, and troubleshooting procedures will show up clearly on this rear projection screen. The customer engineer's entire library, converted to fiche, can be carried inside the case.

TECHNICAL SPECIFICATIONS

SCREEN SIZE
  11.0 in H X 14.0 in W
  27.4 cm H X 35.6 cm W

WEIGHT
  Under 12.5 lbs
  Under 5.7 kg

ELECTRICAL
  Standard 115V — 50/60 Hz
  Optional 230V — 50/60 Hz

LAMP
  Long Life Tungsten Halogen

WARRANTY
  120 days (except glass and lamp)

MAGNIFICATIONS
  Single 24X, 42X, or 48X
  Dual 24/42X or 24/48X
  Other magnifications on request

READER SIZE
  Closed
  6.0 in H X 14.3 in D X 17.0 in W
  15.2 cm H X 36.3 cm D X 43.2 cm W

  Open
  17.5 in H X 17.5 in D X 17.0 in W
  44.5 cm H X 44.5 cm D X 43.2 cm W

OPTIONS
  DC Operation
  Battery Operation

©Visidyne, Inc. 1981   Atch 2-1

VISIDYNE
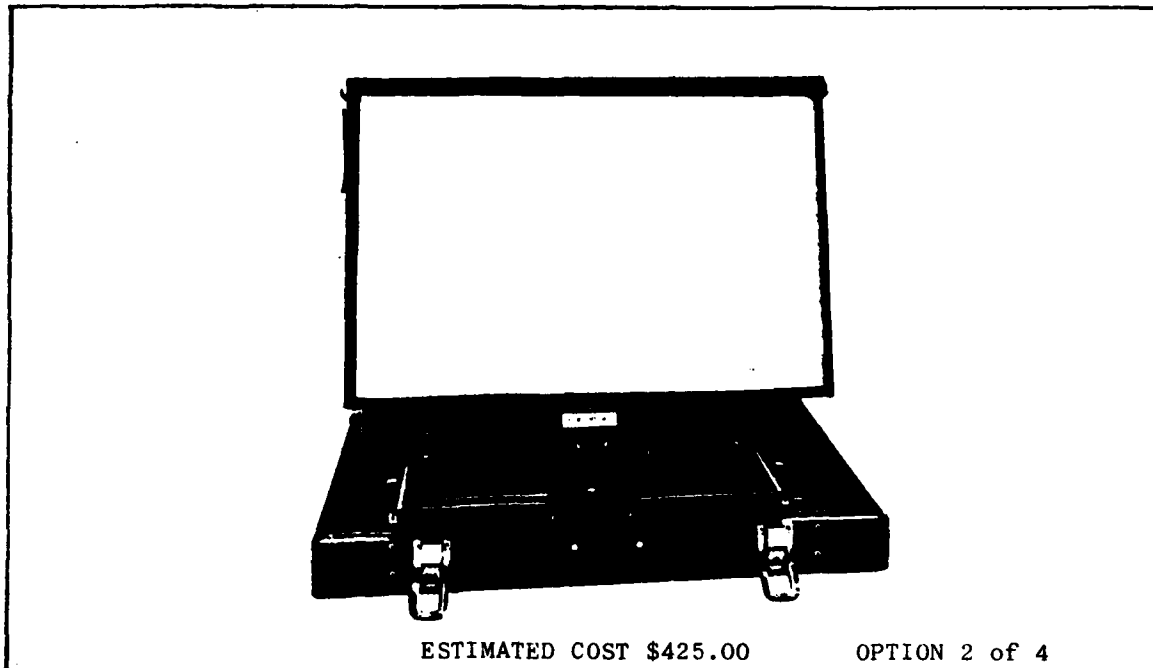**MICROFORM READERS & SYSTEMS**

5   CORPORATE   PLACE   ■   SOUTH   BEDFORD   STREET   ■   BURLINGTON, MASSACHUSETTS   01803   ■   (617) 273-2820

The manufacturer reserves the right to change designs and specifications.

TEC-KIT™

ESTIMATED COST $425.00   OPTION 2 of 4

Tec-Kit is a new breed of portable rear projection microfiche reader for the field engineer who is working on sophisticated equipment. Using this reader's 11 X 17 inch screen, the field engineer can view a "B-size" drawing at full size. With proper formatting two "A-size" drawings can be shown simultaneously or you can have an exploded assembly drawing on one side of the screen along with a page of related explanatory material on the other side.

Tec-Kit weighs less than 14 pounds! Combine its high-quality image with one-half cubic foot of storage space and you have a unique and very desirable instrument.

TECHNICAL SPECIFICATIONS

SCREEN SIZE
 11.0 in H X 17.0 in W
 27.9 cm H X 43.2 cm W

WEIGHT
 Under 14.0 lbs
 Under 6.4 kg

ELECTRICAL
 Standard 115V — 50/60 Hz
 Optional 230V — 50/60 Hz

LAMP
 Long Life Tungsten Halogen

WARRANTY
 120 days (except glass and lamps)

MAGNIFICATIONS
 Single 24X, 42X, or 48X
 Dual 24/42X or 24/48X
 Other magnifications on request

READER SIZE
 Closed
 6.0 in H X 14.3 in D X 20.0 in W
 15.2 cm H X 36.3 cm D X 50.8 cm W

 Open
 17.5 in H X 17.5 in D X 20.0 in W
 44.5 cm H X 44.5 cm D X 50.8 cm W

OPTIONS
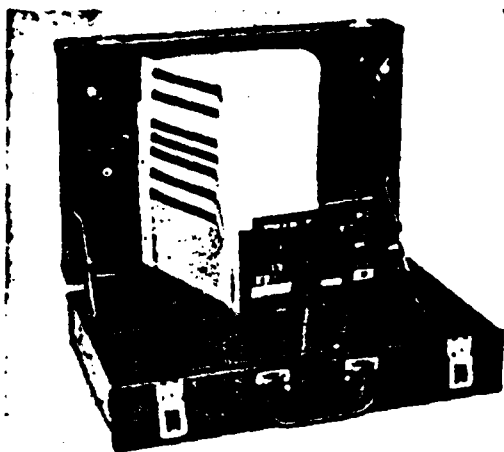 DC Operation
 Battery Operation

Realist Agent

If you're often on the move between sales calls, office, classroom, or job site, here's a great portable reader that'll travel with you. The compact Agent lets you view microfiche anywhere, with a reader/briefcase combination that gives you plenty of room for calculator, note pads, and other tools of your profession.

Foam compartments inside the case cover provide convenient storage for all the reader components — projection module, battery pack, transformer, and extra lens. This leaves the entire briefcase free to carry other materials — you'll never have to carry two cases! Unlike hand held viewers, The Agent projects a large, easy-to-read image which can be viewed by several people at the same time.

- Handy Eichner fiche panel with a storage capacity of 40 fiche
- Briefcase: 19" x 13" x 4.75", quality leather-like vinyl
- Choice of H lens (24X, 42X) or I lens (48X). Lenses are interchangeable.
- Projection module: very durable rugged Lexan plastic construction, low wattage lamp, no glass carrier, no moveable parts

realist Micrographic Systems

ESTIMATED COST $400.00   OPTION 3 of 4

Specifications:

Weight:	10 lbs.
Screen:	Front projection, silver, 10.5" x 10.5"
Lamp:	ESA tungsten halogen lamp, 6V, 10W
Power:	Standard: 110/120V AC 50/60 Hz Optional: 220V or 240V

Accessories:

- Battery pack · 6V DC rechargeable battery pack enables The Agent to be used anywhere. Small, 45 min. battery pack can be recharged with the auto recharger. Three hour pack also available.
- Extra 40-pocket fiche panels
- Indexed fiche transport
- Roll film attachment

Anacomp/Northwest Microfilm
WSI Elite II Portable Reader

A portable reader with 100% blowback with a 11" x 14" high contrast non-glare blue screen. The Elite II offers interchangeable single or dual lens capacity, single or dual carrier, and multiple power input options including internal batteries. Other features include a choice of magnifications ranging from 24x thru 48x and storage capacity for fiche and source document data. All features are self-contained in a compact, durable and contemporary design case. Dimensions: Closed 5¼ "H × 16½ "W × 17½ "D. Open 19 "H × 16½-"W 17½ "D. Weight 16 lbs.

Options:

Dual lens

Dual Carriage

12 Volt DC

Internal Battery

Carrier Drag

Spare Lamp

Line Guide

120V/240V AC Selector Switch

220V/50Hz Power

When ordering specify:

Anacomp/NMI/WSI Elite II Portable Reader

State magnification, carriage size, screen color and options required.

ESTIMATED COST $450.00   Option 4 of 4

LIST OF MOBILITY MICROFICHE DOCUMENTS

The following documents are examples of microfiched products that would be needed for mobility.

>Table of Allowances
>Technical Order Indexes (Aircraft and Vehicles)
>Unit Type Codes (UTCs)
>Time Phase Force Deployment Listings (TPFDL)
>Time Phase Force Deployment Data (TPFDD)
>Worldwide SNUD
>Federal Supply Catalog Master Cross-Reference List (MCRL-1)
>Master Cross-Reference List (MCRL-2)
>Stock Lists
>Identification Lists
>ISG (DO 97) Listing
>AFR 11-6, Nicknames and Exercise Terms
>AFR 75-32, Terminal Facilities Guide - Commercial Contractor
>AFR 75-41, Terminal Facilities Guide - U.S. Navy, Marine Corps, Coast Guard
>AFR 75-42, Terminal Facilities Guide - USAF
>AFP 87-13, USAF Installation Directory (Worldwide)
>AFR 300-4, Unclassified Data Elements

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